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APHIS 91-22
August 1974

NATIONAL TICK SURVEILLANCE PROGRAM

Calendar Year 1973

Animal and Plant Health Inspection Service

UNITED STATES DEPARTMENT OF AGRICULTURE

Prepared by
Veterinary Services
Animal and Plant Health Inspection Service
UNITED STATES DEPARTMENT OF AGRICULTURE
Hyattsville, Md. 20782

NATIONAL TICK SURVEILLANCE PROGRAM

Calendar Year 1973

During calendar year 1973, the collection and submission of ticks from native and imported animals was 109 percent more than for 1972. There were 7,613 species collections in 1973, compared with 3,645 in 1972.

THE TEXAS *BOOPHILUS* PROBLEM

The current Texas tick problem was disclosed with the discovery of cattle fever ticks on cattle in a livestock market at Alice, Tex., on August 22, 1972. By the end of 1972, a total of 64 infestations was detected, 63 in Texas and 1 in Imperial County, California.

As a result of the 1972 Alice, Tex., *Boophilus* outbreak, the Federal and State personnel greatly intensified their surveillance activities in Texas. A total of 6,041 species collections was made in Texas from all hosts during 1973. This compares to 2,268 species collections in Texas from all hosts in 1972. Both the Federal and State personnel are to be commended for the interest and effort they put forth in detecting and containing the tick outbreaks.

During calendar year 1973, 57 new tick outbreaks were detected as the result of intensified surveillance activities by field personnel. As of December 31, 1973, parts or all of 16 counties in the south Texas area were under quarantine for *Boophilus* tick infestation.

TICK THREAT TO THE SOUTHERN STATES

The current tick outbreak in Texas is the most widespread since cattle fever ticks were eradicated from the United States in 1943. Fortunately, so far the tick has not established itself outside the South Texas area, where it was originally found. However, it should be emphasized that *Boophilus annulatus* is capable of reinfesting the Southeastern States and along the Atlantic Coast as far north as Virginia. It is estimated that in 1906 cattle fever ticks cost southern cattlemen approximately $40 to $100-million annually.

The threat of the reintroduction of *B. annulatus* in the Southern States is great; and, if it were to become widely reestablished in this area, the annual cost would probably greatly exceed the 1906 value of $40 million annually. There have been enormous changes in the agricultural industry in the Southern States in the past 50 years. The shift has been to cattle and pasture-

land and away from row crops, such as cotton. This has resulted in a tremendous increase in the number of cattle in this area, all of which are highly susceptible to babesiosis (cattle tick fever).

Efforts have been made to stimulate interest in increased surveillance by State and Federal personnel in the Southern States. At the United States Animal Health Association Meeting in St. Louis in October 1973, a plea was made for increased tick surveillance activities. All State and Federal veterinary regulatory personnel, practicing veterinarians, extension agents, and livestock owners, should be made aware of the threat of the reintroduction of cattle fever ticks in the Southern States. With the worldwide protein shortage, it is imperative that every effort be made to protect our livestock industry from this threat.

TICKS AND ZOOLOGICAL COMPOUNDS

In recent years there has been a trend to develop large, commercial zoological compounds throughout the United States. Generally, these are large, double-fenced compounds where a variety of compatible wild animals roam freely. The general theme is to develop habitats suggestive of Africa where the animals usually originate. For a fee, the tourist or interested party may tour the facility in his own automobile or in a vehicle provided by the management. This allows him to observe the wildlife in their "native" habitat.

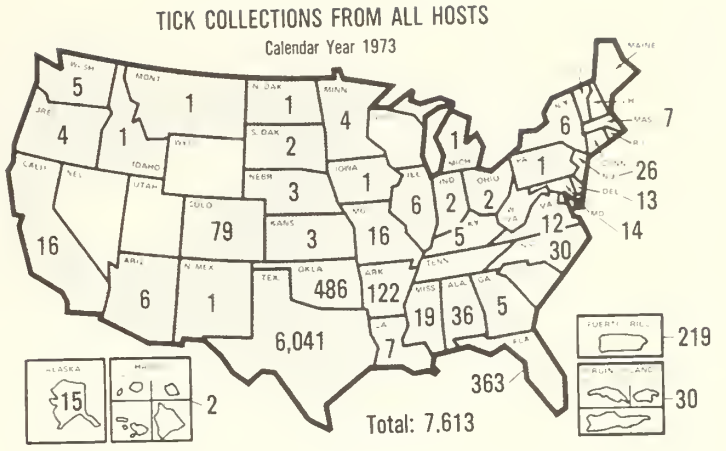
However, such a compound poses some problems regarding the possible introduction of exotic ticks on animals from Africa. Some species of animals are not required to be held in quarantine at the USDA Animal Quarantine Station, Clifton, N.J. Nevertheless, these animals may serve as suitable hosts for the immature and mature stages of economically important ticks. For example, a shipment of rhinoceroses entered the United States through the port of Mobile and were subsequently found infested with live *Amblyomma hebraeum*. In 1960, live *Rhipicephalus evertsi* ticks were found on elands, zebras, and nilghai in "Africa USA" at Boca Raton, Florida. An intensive eradication effort was required to eradicate this tick. Shortly thereafter, *R. evertsi* and *R. pulchellus* were found at "Busch Gardens," Fla., and at the "Catskill Game Farm" in upstate New York.

Exotic ticks are also commonly found on animals in quarantine at the USDA Animal Quarantine Station, Clifton, N.J. Precautionary dipping is routinely carried out on such animals held in quarantine. The real threat exists with those animals which may enter the USA without having to be held in quarantine or having to be given a precautionary dipping.

Not only are many exotic ticks serious blood-sucking parasites of domestic livestock, but they also transmit diseases such as anaplasmosis, babesiosis, theileriosis, heartwater, Nairobi sheep disease and spirochetosis.

REPORT OF ALL TICKS COLLECTED
CALENDAR YEAR 1973

STATE	TOTAL	CATTLE	DOGS	HORSES & MULES	ZOO ANIMALS & MISC.	NATIVE WILDLIFE	ANIMALS OFFERED FOR ENTRY
TOTAL	7,613	5,728	380	796	239	281	189
Alabama	36	23	6	1	6		
Alaska	15				1		14
Arizona	6	5			1		
Arkansas	122	9	16		16		
California	16	4	4	1	1		9
Colorado	79	5	43	4	14	8	5
Connecticut							
Delaware	13		2		3	8	
Florida	363	65	2	291	2	3	
Georgia	5	5					
Hawaii	2						2
Idaho	1				1		
Illinois	6				6		
Indiana	2		1		1		
Iowa	1		1				
Kansas	3	1			2		
Kentucky	5	3		1	1		
Louisiana	7		2			3	2
Maine							
Maryland	14		6		5	3	
Massachusetts	7		6				1
Michigan	1				1		
Minnesota	4		2		2		
Mississippi	19	10	6		2		
Missouri	16	11	5				
Montana	1	1					
Nebraska	3		2		1		
Nevada							
New Hampshire							
New Jersey	26		1		1		24
New Mexico	1	1					
New York	6		2		1		3
North Carolina	30		13		17		
North Dakota	1		1				
Ohio	2		1	1			
Oklahoma	486	216	117	14	53	86	
Oregon	4	1	2		1		
Pennsylvania	1		1				
Rhode Island							
South Carolina							
South Dakota	2		2				
Tennessee							
Texas	6,041	5,193	122	353	77	161	129
Utah							
Vermont							
Virginia	12	4	5		3		
Washington	5		4		1		
West Virginia							
Wisconsin							
Wyoming							
Puerto Rico	219	74	4	127	14		
Virgin Islands	30	13	1	3	5	8	



U.S. DEPARTMENT OF AGRICULTURE VETERINARY SERVICES ANIMAL AND PLANT HEALTH INSPECTION SERVICE

REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1973 | HOST: NATIVE WILDLIFE

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP	DERMACENTOR ALBIPICTUS	DERMACENTOR SILVARUM & BANKSI	DERMACENTOR TUMIDUS	DERMACENTOR ATTENS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP	HAEMAPHYSALIS LEPORISPALUSTRIS	IXODES CookEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP	ORNITHODOROS SPP	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	281	24	4		37	9			7	17		5	1	118		17	4		37					1		
Alabama																											
Alaska																											
Arizona																											
Arkansas																											
California																											
Colorado	8									2D 6EK																	
Connecticut																											
Delaware	8													4RC 20P			2RC										
Florida	3				1L														1RC 1D								
Georgia																											
Hawaii																											
Idaho																											
Illinois																											
Indiana																											
Iowa																											
Kansas																											
Kentucky																											
Louisiana	3									1D		1D							1D								
Maine																											
Maryland	3	1F																1RC 1F									
Massachusetts																											
Michigan																											
Minnesota																											
Mississippi	1																		1BC								
Missouri																											
Montana																											
Nebraska																											
Nevada																											
New Hampshire																											
New Jersey																											
New Mexico																											
New York																											
North Carolina																											
North Dakota																											
Ohio																											
Oklahoma	86	1EK 10D 1SK,8CO			6CO							4D		1SK,1BC 1EK,21CO					1B1 31D								
Oregon																											
Pennsylvania																											
Rhode Island																											
South Carolina																											
South Dakota																											
Tennessee																											
Texas	161	2CO 1G	3CO 1BD		30CO	1BC[m],1BD 1SN[f],3CO 2CO[p],1CO[m]				7D 1CO				6BCO,1F 6BC,3J,3BD 7RC		11R,1F 5JR			1D					1CO			
Utah																											
Vermont																											
Virginia																											
Washington																											
West Virginia																											
Wisconsin																											
Wyoming																											
Puerto Rico																											
Virgin Islands	8								7D				1D														

Key to Host

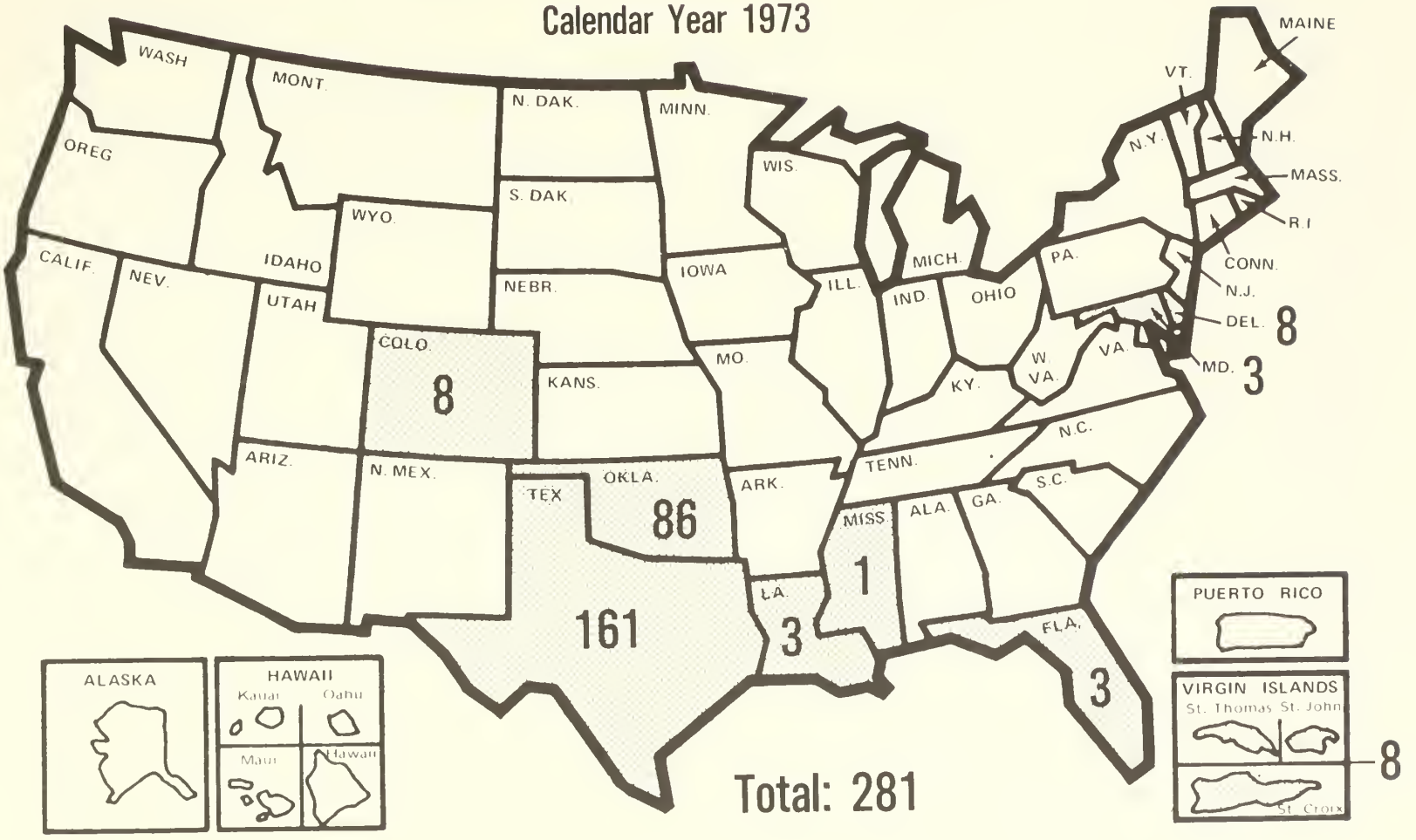
BC	Bobcat	G	Goat	RC	Raccoon
BD	Badger	J	Javelina (Peccary)	SN	Snake
Bl	Bird	JR	Jack Rabbit	SK	Skunk
CO	Coyote	L	Fence Lizard (Scoloperus)		
D	Deer	OP	Opossum		
EK	Elk	PY	Python		
F	Fox	R	Rabbit		

Key to Species

f	Amblyomma dissimile
m	Amblyomma inornatum
p	Amblyomma ovale

TICK COLLECTIONS FROM NATIVE WILDLIFE

Calendar Year 1973



REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1973 | HOST: CATTLE

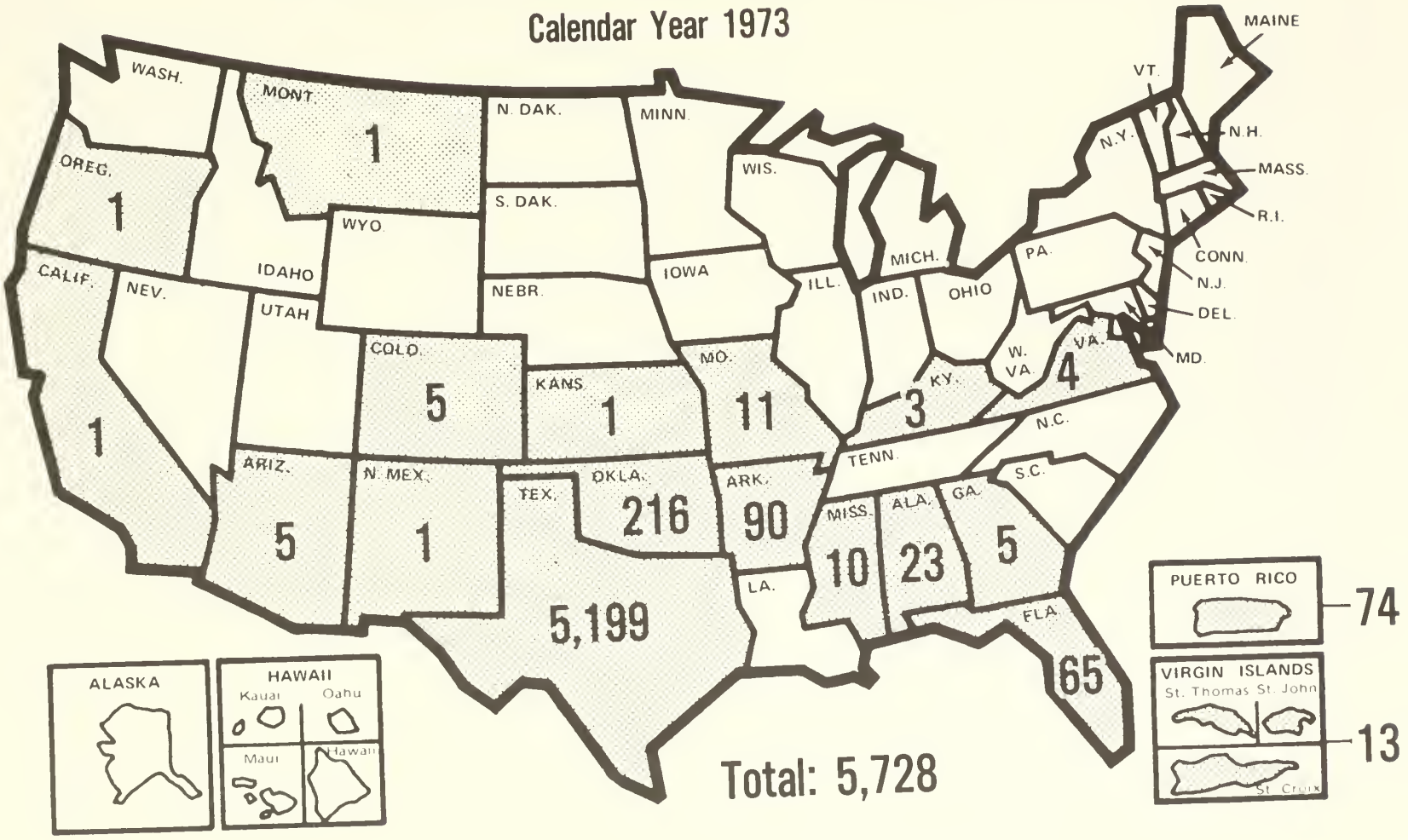
STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAYENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP	ARGA PERS...	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	HEMAPHYSALIS CHORDEILIS	DERMACENTOR NITIDUS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORISPALUSTRIS	IXODES CONEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	5,728	2,025	946	11	1,082	201		40	58	8	117	1	32	73	916	6	4			67			125	11		5
Alabama	23	4			13								2		3									1		
Alaska																										
Arizona	5										5															
Arkansas	90	78													5					4				3		
California	1																						1			
Colorado	5										1	1											3			
Connecticut																										
Delaware																										
Florida	65	9			40										6					10						
Georgia	5	3													2											
Hawaii																										
Idaho																										
Illinois																										
Indiana																										
Iowa																										
Kansas	1																						1			
Kentucky	3														3											
Louisiana																										
Maine																										
Maryland																										
Massachusetts																										
Michigan																										
Minnesota																										
Mississippi	10	4			3															2			1			
Missouri	11	10													1											
Montana	1										1															
Nebraska																										
Nevada																										
New Hampshire																										
New Jersey																										
New Mexico	1										1															
New York																										
North Carolina																										
North Dakota																										
Ohio																										
Oklahoma	216	134			23	1					2				33					8			15			
Oregon	1																						1			
Pennsylvania																										
Rhode Island																										
South Carolina																										
South Dakota																										
Tennessee																										
Texas	5,199	1,781	946	11	1,003	145[m] 55[m]		40	46	8	107		30		861	6	4			43			103	5		4[l] 1[q]
Utah																										
Vermont																										
Virginia	4	2													2											
Washington																										
West Virginia																										
Wisconsin																										
Wyoming																										
Puerto Rico	74													72										2		
Virgin Islands	13								12					1												

Key to Species

l Haemaphysalis sp.
m Amblyomma inornatum
q Ornithodoros turicata

TICK COLLECTIONS FROM CATTLE

Calendar Year 1973



REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1973

HOST: ZOO ANIMALS and MISCELLANEOUS HOST (Sheep, Human etc.)

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR SPICATUS, FERRISI & RANKSI	DERMACENTOR NITENS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORISPALUSTRIS	IXODES COOKEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	239	67	3	2	14	26	1	4		8	13	1	13	68	1	1			5	1		2	6		3
Alabama	6	2Q			2Q									2Q											
Alaska	1										1Q														
Arizona	1									1X															
Arkansas	16	4Y,1X, 6Q,1S												1C,1S, 1Q					1Q						
California	1													1C											
Colorado	14									2H	8H			1H								1Q	10,1X		
Connecticut																									
Delaware	3	1H												2H											
Florida	2				1H									1Y											
Georgia																									
Hawaii																									
Idaho	1										1Q														
Illinois	6		1TS			1A[b] 2TS[3g]																			2AE[c]
Indiana	1													1C											
Iowa																									
Kansas	2				1Q						1Q														
Kentucky	1													1H											
Louisiana																									
Maine																									
Maryland	5	1H				2Q[f] 1CH								1H											
Massachusetts																									
Michigan	1					1BA[f]																			
Minnesota	2					1C[f]															1C[R]				
Mississippi	2	1				1[h]																			
Missouri																									
Montana																									
Nebraska	1													1H											
Nevada																									
New Hampshire																									
New Jersey	1	1Q																							
New Mexico																									
New York	1													1H											
North Carolina	17													5Q,1X 2C,7H		1Q							1Q		
North Dakota																									
Ohio																									
Oklahoma	53	9H 11Q			5Q 1H	1AE[h]						1Q		1X,1Y 7 15H					1Q						
Oregon	1										1C														
Pennsylvania																									
Rhode Island																									
South Carolina																									
South Dakota																									
Tennessee																									
Texas	77	8H,5Y, 11Q,2X	1Q 1Y	2H	2Q 2H	15H 1PY[n]				1X 5Q				4H,5Q 3Y,1X 1C					1H,1Y 1C			1Q	1X		1Q[o]
Utah																									
Vermont																									
Virginia	3	1H				1WR[j]									1WR[1]										
Washington	1										1G														
West Virginia																									
Wisconsin																									
Wyoming																									
Puerto Rico	14												1X,10Q 2Y										1X		
Virgin Islands	5							4G																	

ANH FORM S-55 MAY 1971 REPLACES ADC FORM 54

Key to Host

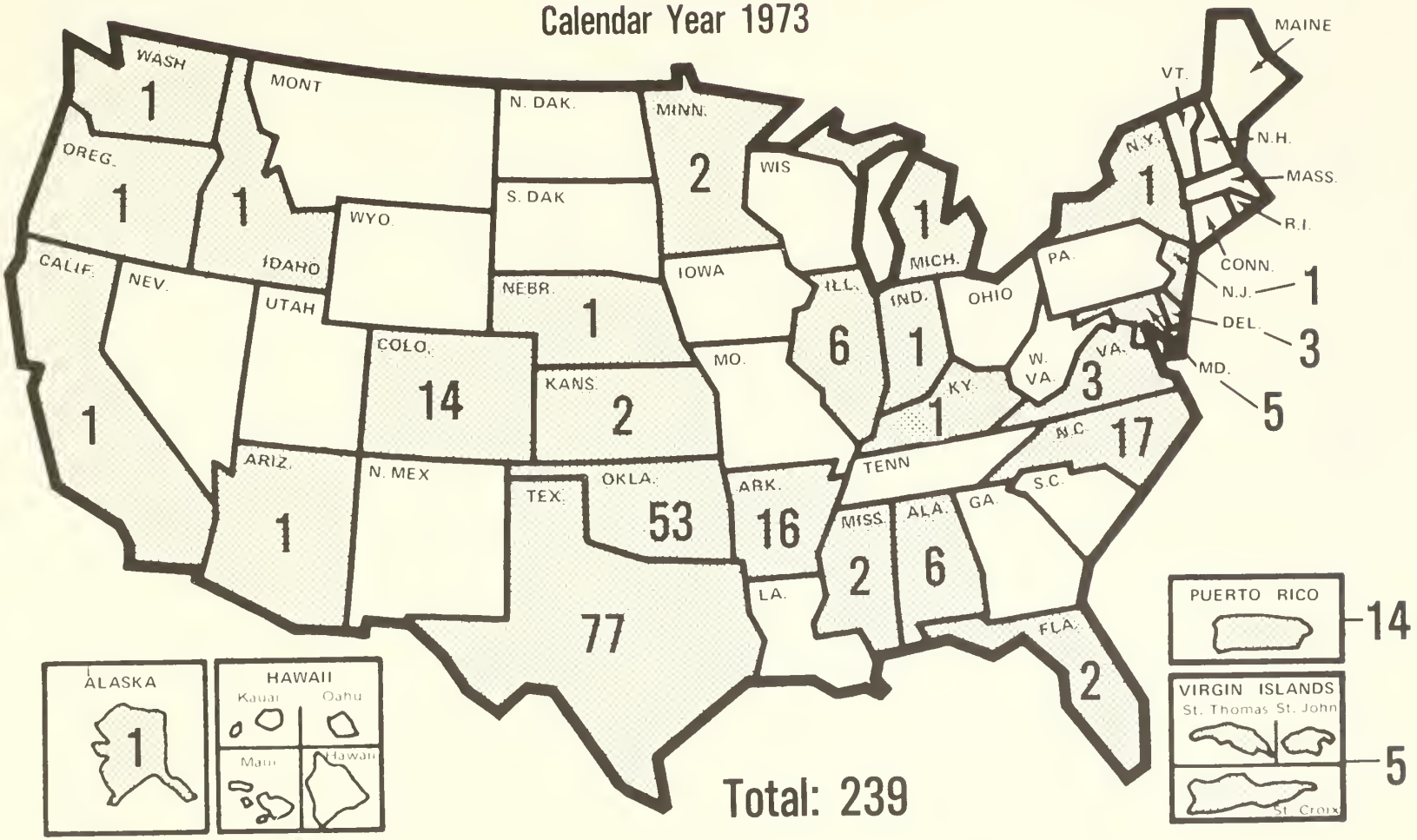
A	Armadillo (Bolivian)	IG	Iguana	X	Inanimate Object
AE	Anteater	PY	Python		
BA	Boa Constrictor	Q	Host not given		
C	Cat	S	Sheep		
CH	Chicken	TS	3-toed Sloth		
G	Goat	WR	White Rhino		
H	Human	Y	Swine		

Key to Species

b	Amblyomma pseudoconcolor	1	Dermacentor rhinocerinus
c	Aponomma concolor	j	Amblyomma hebraeum
d	Amblyomma nodosum	n	Amblyomma moreliae
e	Amblyomma geayii	o	Argas radiatus
f	Amblyomma dissimile	p	Amblyomma ovale
g	Ixodes muris		
h	Amblyomma javanense		

TICK COLLECTIONS FROM ZOO ANIMALS AND MISCELLANEOUS HOSTS

Calendar Year 1973



REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1973 | HOST: DOGS

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA UNITARIUM	AMBLYOMMA MACULATUM	AMBLYOMMA SPP	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP	DERMACENTOR ALBIPICTUS	DERMACENTOR NITENS (=VARIABILIS)	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP	HAEMAPHYSALIS LEPORISPALUSTRIS	IXODES CONEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	380	57	1		15	8					9		158		1	3	1	30	3		9	85		
Alabama	6	1											1					1				3		
Alaska																								
Arizona																								
Arkansas	10	4			1								3					1				8		
California	4												2								1	1		
Colorado	43				1						7		4			1			1[a]		6	23		
Connecticut																			1[a]					
Delaware	2												1			1								
Florida																						2		
Georgia																								
Hawaii																								
Idaho																								
Illinois																								
Indiana	1												1											
Iowa	1																					1		
Kansas																								
Kentucky																								
Louisiana	2																					1		
Maine																								
Maryland	6												4									1		
Massachusetts	6												5									1		
Michigan																								
Minnesota	2												1					1						
Mississippi	6	1																2				2		
Missouri	5												4									1		
Montana																								
Nebraska	2																							
Nevada																								
New Hampshire																								
New Jersey	1																					1		
New Mexico																								
New York	2												1									1		
North Carolina	13												12				1							
North Dakota													1											
Ohio	1												1											
Oklahoma	117	2			13								79						3			1		
Oregon	3										1											1		
Pennsylvania	1																					1		
Rhode Island																								
South Carolina																								
South Dakota	2												1									1		
Tennessee																								
Texas	122	26			3	7							33		1			22			2	27		
Utah																								
Vermont																								
Virginia	5	1											2									2		
Washington	4										1						1		1[k]			1		
West Virginia																								
Wisconsin																								
Wyoming																								
Puerto Rico	4																					4		
Virgin Islands	1																					1		

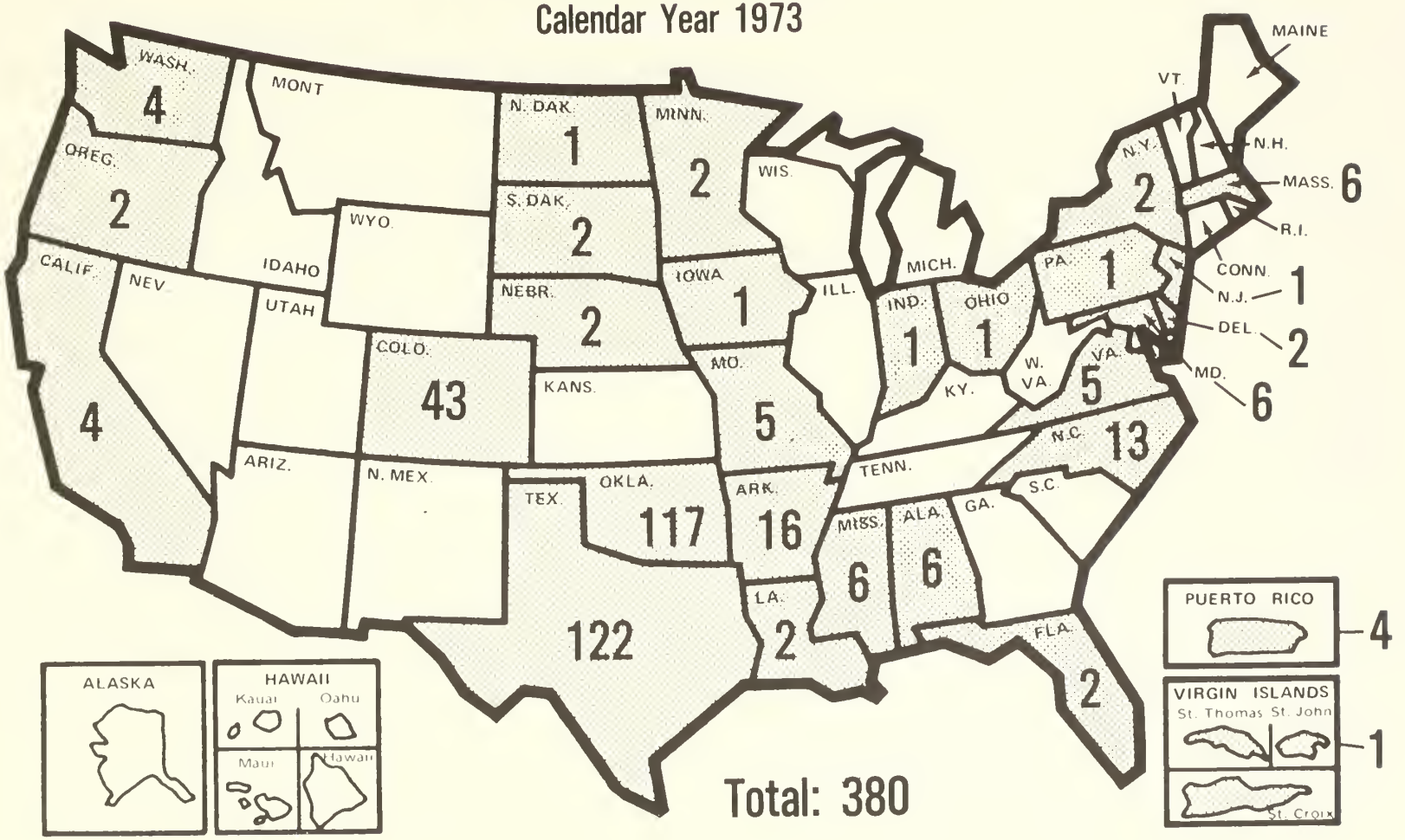
ANH FORM 5-55 MAY 1971 — REPLACES ADE FORM 5-55, DEC 1958, WHICH IS OBSOLETE — USDA-ARS

Key to Species

a Ixodes sculptus
k Ixodes rugosus

TICK COLLECTIONS FROM DOGS

Calendar Year 1973



REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1973

HOST: HORSES AND MULES

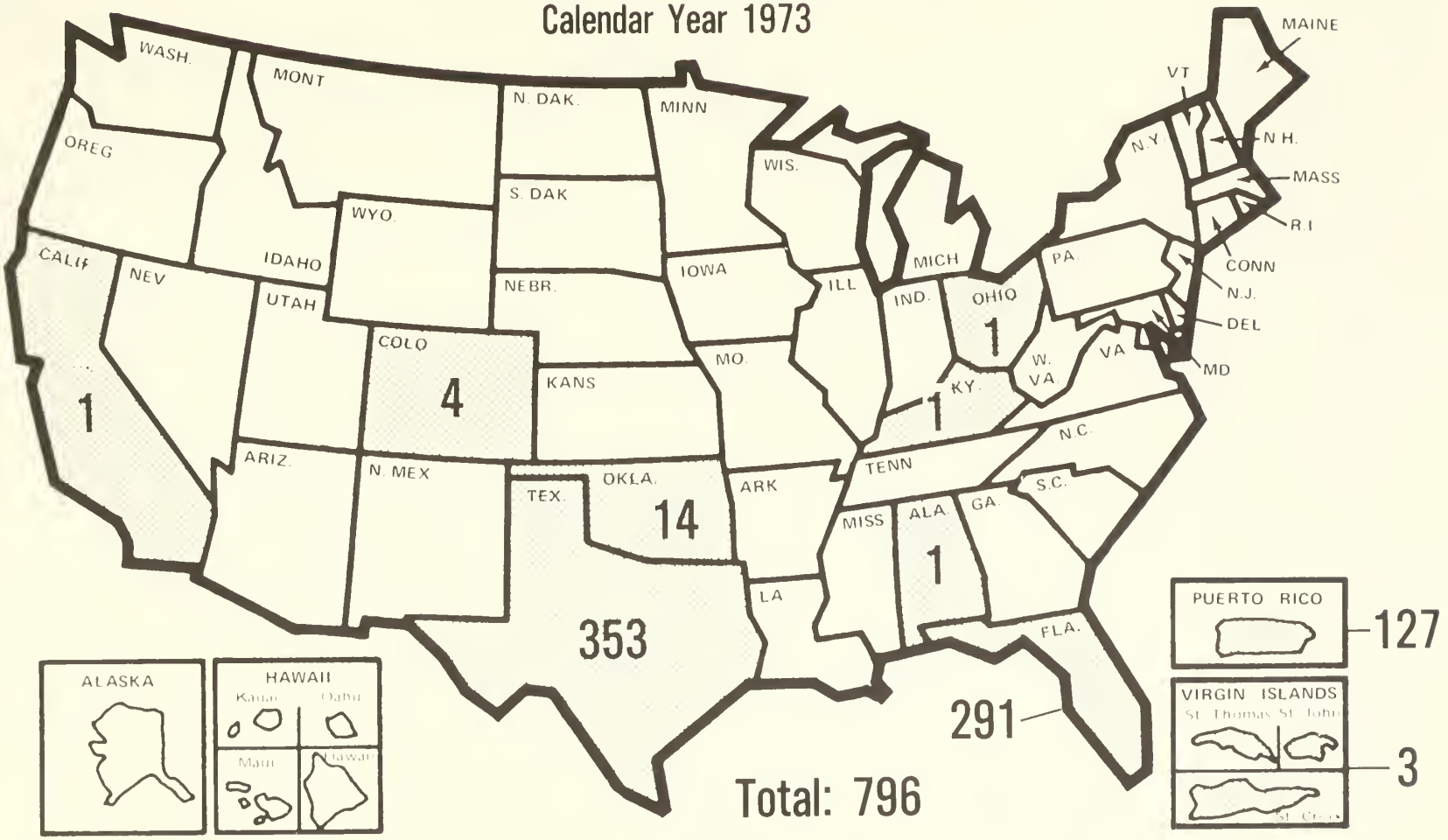
STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA INFLATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP	DERMACENTOR ALBIPICTUS	DERMACENTOR SILVARUM	DERMACENTOR NITENS	DERMACENTOR NIGROLINEATUS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP	HAEMAPHYSALIS LEPORISPALUSTRIS	IXODES CONEXUS	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODORUS SPP	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP	MISCELLANEOUS SPP.
TOTAL	796	53	50	1	112	6		2	1		14	2	3	258		249	1			36				6	2		
Alabama	1				1																						
Alaska																											
Arizona																											
Arkansas																											
California	1																							1			
Colorado	4										2	2															
Connecticut																											
Delaware																											
Florida	241	2			94									125		36				32				2			
Georgia																											
Hawaii																											
Idaho																											
Illinois																											
Indiana																											
Iowa																											
Kansas																											
Kentucky																1											
Louisiana																											
Maine																											
Maryland																											
Massachusetts																											
Michigan																											
Minnesota																											
Mississippi																											
Missouri																											
Montana																											
Nebraska																											
Nevada																											
New Hampshire																											
New Jersey																											
New Mexico																											
New York																											
North Carolina																											
North Dakota																											
Ohio	1															1											
Oklahoma	4															4				1							
Oregon																											
Pennsylvania																											
Rhode Island																											
South Carolina																											
South Dakota																											
Tennessee																											
Texas	353	42	50	1	17	1		2	1		12		3	3		207	1			3				3	2		
Utah																											
Vermont																											
Virginia																											
Washington																											
West Virginia																											
Wisconsin																											
Wyoming																											
Puerto Rico	127													127													
Virgin Islands	3													3													

Key to Species

m Amblyomma inornatum

TICK COLLECTIONS FROM HORSES AND MULES

Calendar Year 1973



REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1973

HOST: TICKS FOUND ON ANIMALS & PRODUCTS OFFERED FOR ENTRY INTO THE UNITED STATES

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA INITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR SILVARUM (=PICTUS)	DERMACENTOR NITENS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP	HAEMAPHYSALIS LEPORISPALUSTRIS	IXODES COOKEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPS.
TOTAL	189	1	5			5		13	26	32	53	1	1		2	3	12			1		2		5	7	16	4
ARIZONA																										
Aqua Prieta	4										4BO															
Nogales	6										6BO						1BH[t]									
Phoenix	1																									1SN[ff]
Tucson	2																2BH[t]									
CALIFORNIA																										
Los Angeles	6										2D	1D			2D				1B							
San Ysidro	3																						1BO 2E			
COLORADO																										
Denver	5					2AT[x] 1AT[y]																			1AT[x]	1AT[y]
HAWAII																										
Honolulu																								2CA		
LOUISIANA																										
New Orleans	2					1GH[z]																		1GH		
MASSACHUSETTS																										
Boston	1																							1X		
NEW JERSEY																										
Clifton	24									62[aa]											20Y[z]		1Z	1Z	17[x] 8Z[z]	1[bb] 2[cc]
NEW YORK																										
Queens	3																								1HH[ee]	1PY[dd] 1ML[dd]
TEXAS																										
Progreso	3		3PF																							
Brownsville	18		1BO						8BO	6BO						1CA	1PF							1CA		
Del Rio	4	1BO									2BO						1E									
Eagle Pass	23					1BO		10BO	1G 1BO	5BO	3BO					1Q 1BO										
El Paso	9										2BO						5BO						1E			
Laredo	38		1X					D 2BO	16BO	15BO	2BO		1BO													
Presidio	13										11BO						2BO									
San Antonio	1																							1X		

Key to Host

AT	Animal Trophies	E	Equine	X	Inanimate Object
B	Bear	GH	Game Hides	Z	Zebra
BH	Bighorn Sheep	HH	Hedgehog	Q	Host Not Given
BO	Bovine	ML	Monitor Lizard		
CA	Canine	PF	Palm Frond		
D	Deer	PY	Python		
DY	Donkey	SN	Snake		

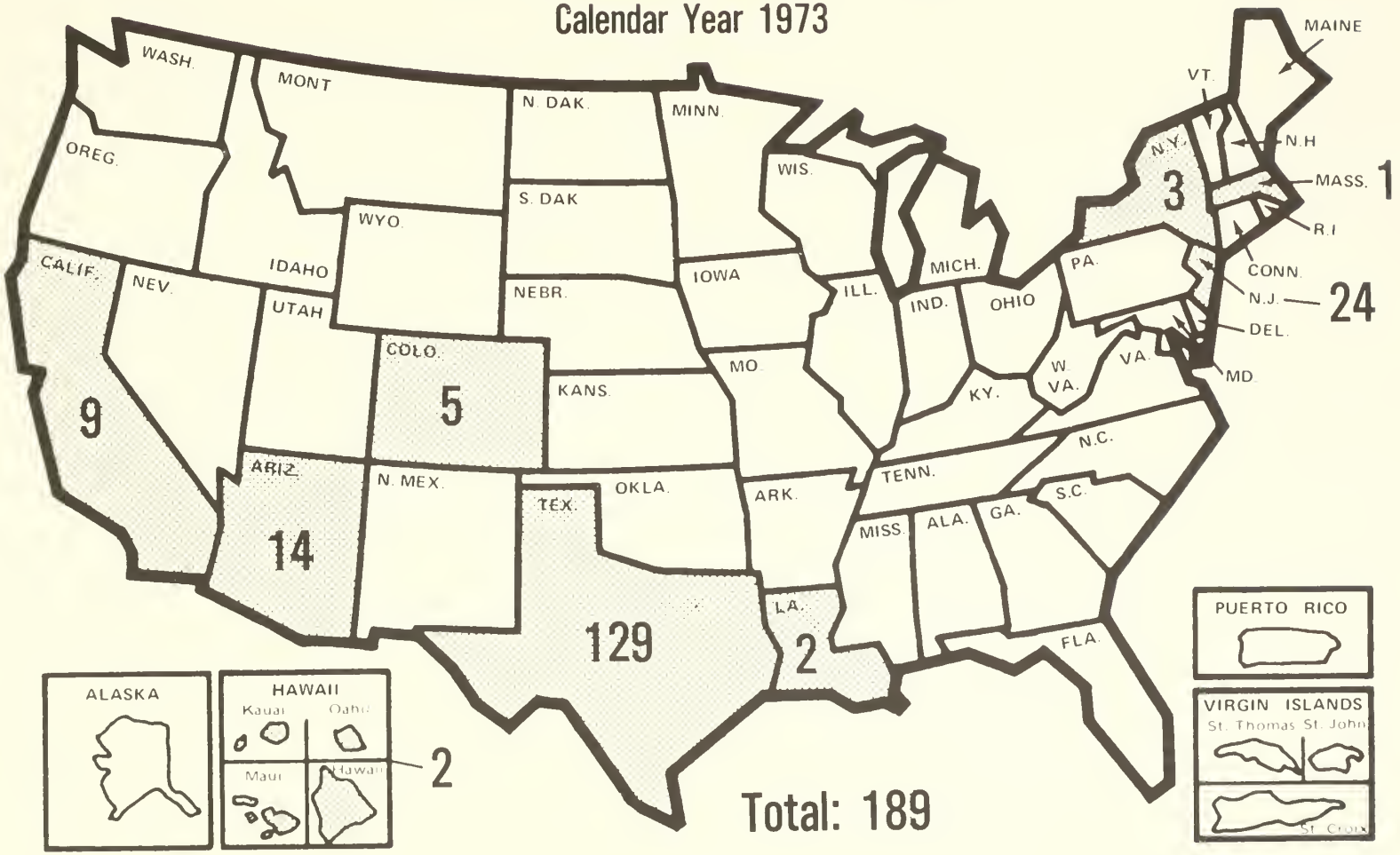
Key to Species

t	Dermacentor hunteri	bb	Rhipicephalus evertsi
v	Amblyomma variegatum	cc	Rhipicephalus pulchellus
w	Amblyomma tholloni	dd	Aponomma sp.
x	Rhipicephalus appendiculatus	ee	Rhipicephalus sulcatus
y	Hyalomma truncatum	ff	Aponomma latum
z	Ixodes ricinus		
aa	Boophilus decoloratus		

USDA-ARS

TICK COLLECTIONS FROM ANIMALS AND PRODUCTS OFFERED FOR IMPORTATION

Calendar Year 1973



UNITED STATES DEPARTMENT OF AGRICULTURE
Animal and Plant Health Inspection Service
Hyattsville, Maryland 20782

Official Business
Penalty for Private Use, $300

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